CLAIMS

1. A method, comprising:

determining a source pixel value of a first bit depth for a source pixel in a source image;

determining a destination pixel value of the first bit depth for a destination pixel in a destination image, the destination pixel corresponding to the source pixel;

deriving a blended pixel value of the first bit depth for a blended pixel in a blended image by applying an alpha value of a second bit depth to the source pixel value and the destination pixel value without converting the pixel values to the second bit depth; and

wherein the second bit depth is greater than the first bit depth.

2. The method as recited in claim 1, further comprising:

deriving an alpha dither matrix from a source dither matrix;

combining one or more alpha values associated with the source image with the alpha dither matrix to derive a source bitonal mask plane;

deriving a destination bitonal mask plane from the source bitonal mask plane; and

wherein the deriving the blended pixel value further comprises deriving the blended pixel value from the source pixel value, the source bitonal mask plane, the destination pixel value and the destination bitonal mask plane.

3. The method as recited in claim 2, wherein a stochastic technique is used to derive the alpha dither matrix when the source printer matrix is unknown.

4. The method as recited in claim 2, wherein the alpha dither matrix is derived from the source dither matrix by rotating the source dither matrix.

5. The method as recited in claim 2, wherein the alpha dither matrix is derived from the source dither matrix by performing a wraparound shift on pixels in the source dither matrix.

6. The method as recited in claim 2, wherein the alpha dither matrix is derived from the source dither matrix by shifting pixels in the source dither matrix a constant number of pixel positions.

7. The method as recited in claim 6, wherein the constant number of pixels is an odd number of pixels that is not a multiple of a dimension of the source dither matrix, the dimension being height or width, depending on the direction of the shift.

8. The method as recited in claim 2, wherein the one or more alpha values associated with the source image is an alpha value that is constant for each pixel in the source image.

9. The method as recited in claim 2, wherein the one or more alpha values associated with the source image are multiple alpha values from an alpha channel that includes an alpha value for each pixel in the source image.

10. The method as recited in claim 2, wherein the source bitonal mask plane is inverted to derive the destination bitonal mask plane.

11. The method as recited in claim 2, wherein deriving the blended pixel value further comprises:

(a) logically applying a source bitonal mask plane pixel value from the source bitonal mask plane to the source pixel value;

(b) logically applying a destination bitonal mask plane pixel value from the destination bitonal mask plane to the destination pixel value; and

(c) logically combining the results of (a) and (b).

12. The method as recited in claim 2, wherein deriving the blended pixel value further comprises:

deriving a first intermediate value by performing a logical AND operation with the source pixel value and the source bitonal mask plane;

deriving a second intermediate value by performing a logical AND operation with the destination pixel value and the destination bitonal mask plane; and

deriving the blended pixel value by performing a logical OR with the first intermediate value and the second intermediate value.

13. A computer-readable medium containing computer-executable instructions that, when executed on a computer, perform the method recited in claim 1.

14. A printing device containing processor-executable instructions that, when executed on a processor in the printing device, perform the method recited in claim 1.

15. An electronic appliance having a display and processor-executable instructions that, when executed on a processor in the electronic appliance, perform the method recited in claim 1.

16. A system, comprising:

memory;

a processor;

a source image stored in the memory, the source image consisting of multiple source pixels, each source pixel having a source pixel value of a first bit depth;

a destination image stored in the memory, the destination image consisting of multiple destination pixels, each destination pixel having a destination pixel value of the first bit depth;

one or more alpha values having a second bit depth stored in the memory;

a source dither matrix stored in the memory;

an alpha dither matrix derivation module configured to derive an alpha dither matrix from the source dither matrix;

a source mask plane derivation module configured to create a source mask plane of the first depth from the one or more alpha values and the alpha dither matrix;

a destination mask plane derivation module configured to create a destination mask plane of the first depth from the source bitonal mask plane; and

a blended image generator configured to create a blended image of the first bit depth from the source image, the destination image, the source mask plane and the destination mask plane, without converting the images to the second bit depth.

17. The system as recited in claim 16, wherein the first bit depth is one bit and the second bit depth is eight bits.

18. The system as recited in claim 16, further comprising a print engine configured to print the blended bitonal image on a print medium.

19. The system as recited in claim 16, further comprising an output module configured to output the blended bitonal image to a video display.

20. The system as recited in claim 16, wherein the one or more alpha values further comprise multiple alpha values in an alpha channel.

21. The system as recited in claim 16, wherein the destination mask plane derivation module is further configured to create a destination mask plane of the first depth by inverting the source bitonal mask plane.

22. The system as recited in claim 16, wherein the blended image generator is further configured to:

create a first intermediate value by logically applying the source mask plane to the source image;

create a second intermediate value by logically applying the destination mask plane to the destination image; and

create the blended image by logically combining the first intermediate result with the second intermediate result.

23. A method for applying an 8-bit alpha channel to a bitonal source image and a bitonal destination image to create a blended bitonal image, the method comprising:

deriving an alpha dither matrix from a source dither matrix;

combining alpha values from the alpha channel with the alpha dither matrix to derive a source bitonal mask plane;

inverting the source bitonal mask plane to derive a destination bitonal mask plane;

applying the source bitonal mask plane to the bitonal source image to derive a first intermediate value;

applying the destination bitonal mask plane to the bitonal destination image to derive a second intermediate value;

logically adding the first intermediate value and the second intermediate value to derive the blended bitonal image.

24. The method as recited in claim 23, wherein deriving the alpha dither matrix further comprises uniformly shifting pixels vertically in the source dither matrix by a constant amount that is not a multiple of a height of the source dither matrix.

25. The method as recited in claim 23, wherein deriving the alpha dither matrix further comprises uniformly shifting pixels horizontally in the source dither matrix by a constant amount that is not a multiple of a width of the source dither matrix.

26. A printer configured to perform the method as recited in claim 23.

27. The method as recited in claim 23, wherein deriving the alpha dither matrix further comprises uniformly shifting pixels horizontally and vertically in the source dither matrix by a constant amount that is not a multiple of a width or height of the source dither matrix.